FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 3 to April 9, 2016 (Week 14)

Overall Summary

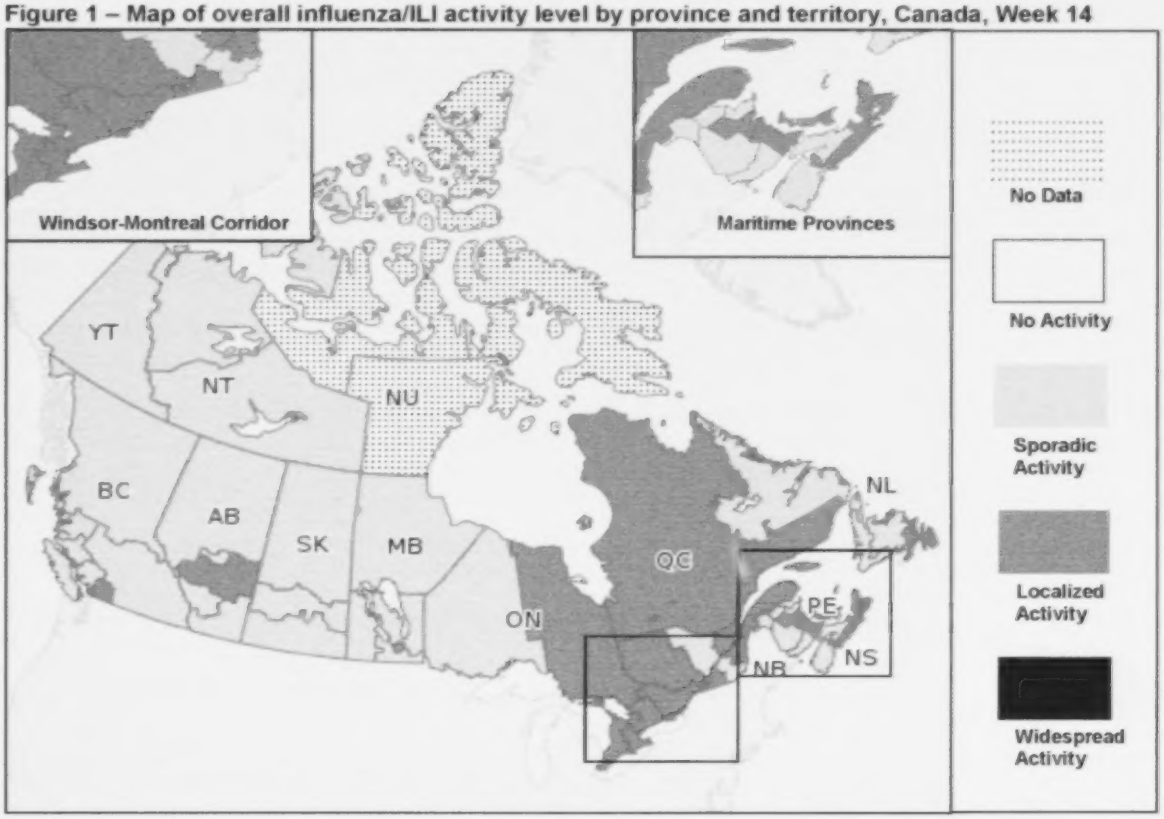
- Influenza activity peaked nationally in in the second week of March; however, lower but sustained activity is being reported throughout the country.
- All regions of Canada reported sporadic or localized influenza activity.
- Both influenza B and influenza A detections decreased in week 14. To date this season, a total of 34,105 positive influenza tests have been reported.
- Hospitalizations, ICU admissions and deaths among the pediatric population, while declining, remain above expected levels based on the past several influenza seasons.
- Despite higher pediatric hospitalizations reported, the pediatric population account for the smallest proportion of all deaths reported.
- For more information on the flu, see our Flu(influenza) web page.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 14, influenza activity was reported in 50 regions across Canada. A total of 30 regions reported sporadic activity levels, while the remaining 20 reported localized activity levels.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 14

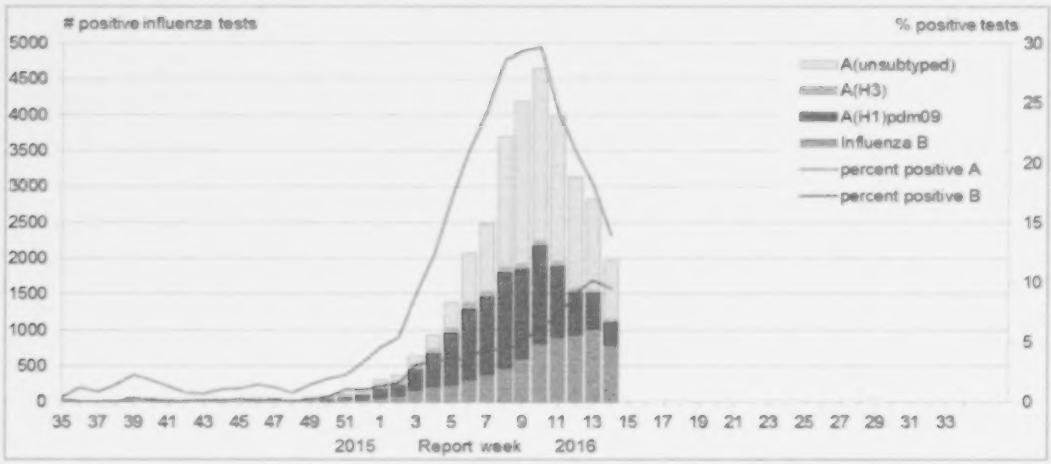


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

In week 14, the percentage of tests positive for influenza continued to decrease from the previous week [from 28% in week 13 to 23% in week 14] (Figure 2). Compared to the previous five seasons, the percent positive (23%) reported in week 14 was above the five year average for that week and exceeded the expected levels (range 11.1%-16.7%). With the late start to the 2015-16 influenza season, these elevated levels are not unexpected.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16



In week 14, there were 1,914 positive influenza tests reported. The number of positive influenza B tests accounted for an increasing proportion of all positive influenza tests reported. Both influenza B and influenza A detections decreased in week 14. This week, influenza B accounted for 41% of all positive tests. To date, 79% of influenza detections have been influenza A and among those subtyped, the vast majority have been influenza A(H1N1) [91% (10510/11511)].

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16

Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 28,818 cases. Children and teenagers (0-19 years of age) accounted for one third of all influenza cases (33%). Children (0-19), young adults (20-44) and middle-aged adults (45-64) accounted for approximately an equal proportion of influenza A(H1N1) cases (28%).

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16

Age groups (years)	Weekly (Apr. 3, 2016 to Apr. 9 2016)					Cumulative (Aug. 30, 2015 to Apr. 9, 2016)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
<5	125	15	0	110	124	4287	1674	63	2550	1044	5333	19%
5-19	46	7	<5	x	138	2302	997	95	1210	1832	4136	14%
20-44	118	30	<5	x	120	5566	2655	150	2761	1574	7140	25%
45-64	171	37	<5	x	75	5994	2639	178	3177	763	6757	23%
65+	175	31	6	138	100	4477	1506	396	2575	974	5452	19%
Total	635	120	10	505	557	22626	9471	882	12273	6187	28818	100%
Percentage[2]	53%	19%	2%	80%	47%	79%	42%	4%	54%	21%		

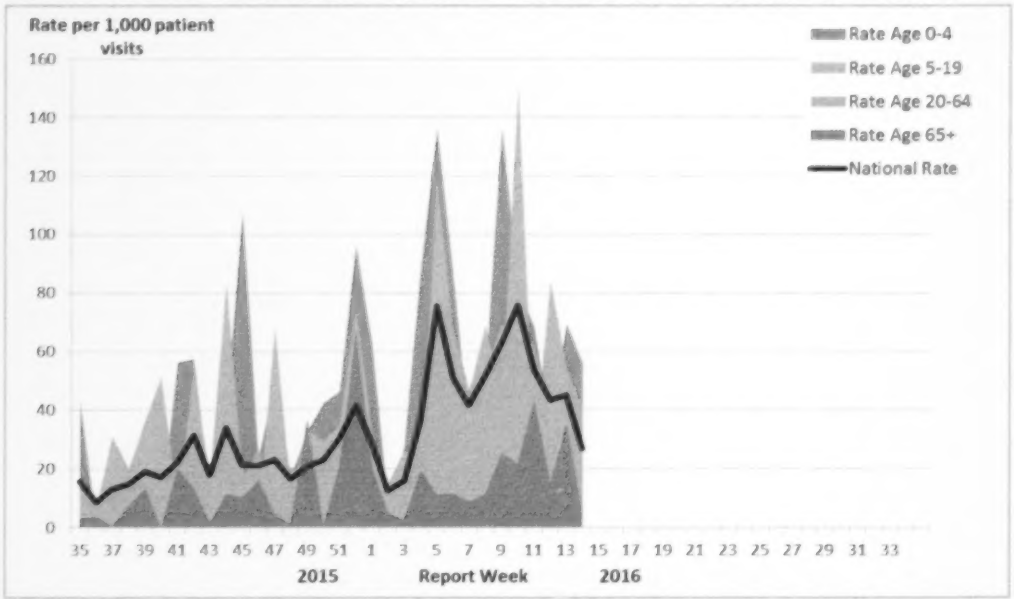
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x - Suppressed to prevent residual disclosure.

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

Influenza-like Illness Consultation Rate

The national ILI consultation rate decreased from the previous week from 45.2 per 1,000 patient visits in week 13, to 26.8 per 1,000 patient visits in week 14. The highest ILI consultation rate was found in the 0-4 years age group (55.9 per 1,000) and the lowest was found in the ≥65 years age group (5.5 per 1,000) (Figure 4).

Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16

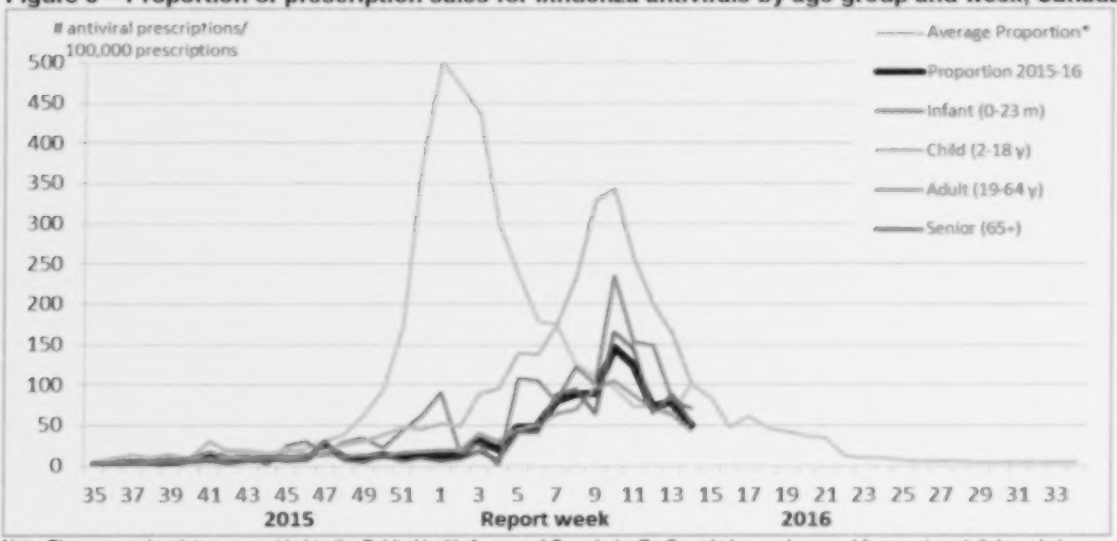


Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Pharmacy Surveillance

During week 14, the proportion of prescriptions for antivirals dereaesd to 50.4 antiviral prescriptions per 100,000 total prescriptions, which is lower than the five year historical average for week 14. The proportion of prescriptions for antivirals remains highest among children. In week 14, the proportion reported among children was 102.4 per 100,000 total prescriptions.

Figure 5 – Proportion of prescription sales for influenza antivirals by age group and week, Canada, 2015-16



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu [oseltamivir] and Relenza [zanamivir]) and the total number of new prescriptions dispensed by Province/Territory and age group.

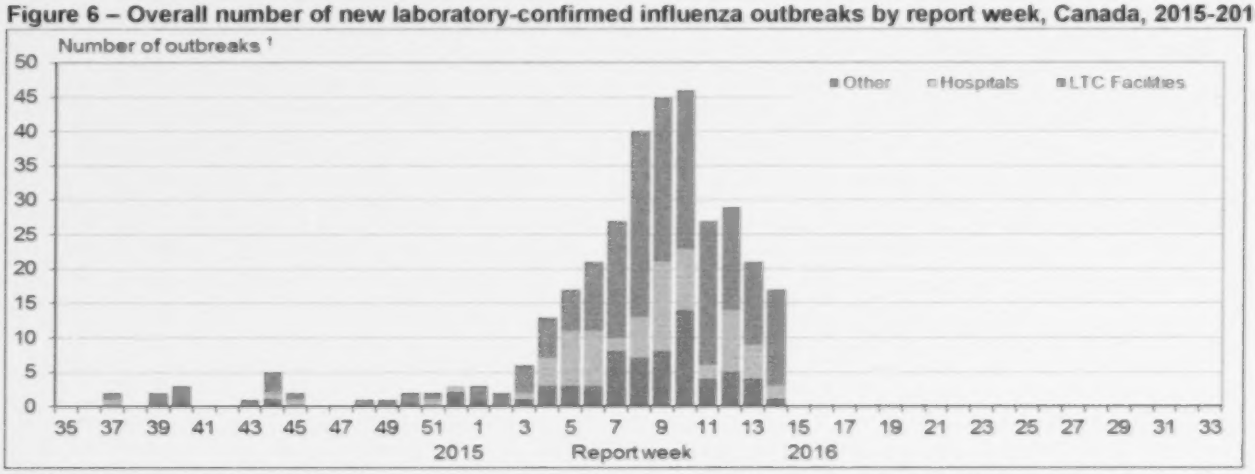
*The average weekly proportion includes data from April 2011 to March 2015.

Influenza Outbreak Surveillance

In week 14, 17 new laboratory confirmed influenza outbreaks were reported: 14 in long-term care facilities (LTCF), two in hospitals and one in institutions or community settings. Of the outbreaks with known strains or subtypes, three outbreaks were due to influenza B, one outbreak was due to influenza A(H1N1), two outbreaks were due to influenza A(H3N2) and eight were due to influenza A(UnS). Additionally, three ILI outbreaks were reported schools.

To date this season, 374 outbreaks have been reported. At week 14 in the 2014-15 season, 1646 outbreaks were reported and in the 2013-14 season,198 outbreaks were reported.

Figure 6 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of this report.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

Hospitalizations reported by the the Immunization Monitoring Program Active (IMPACT) network continue to decrease (Figure 7). In week 14, 58 hospitalizations were reported. The largest proportion of hospitalizations were in children aged 2-4 years, accounting for 46.5% of the hospitalizations. For the first time this season, more influenza B cases were reported than influenza A cases (31 vs. 27 respectively).

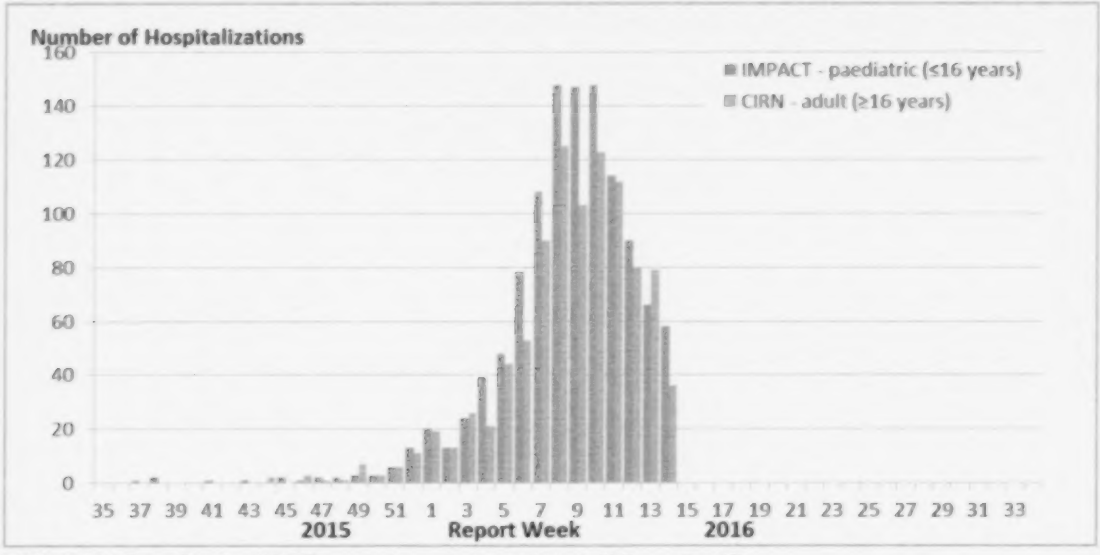
To date this season, 1,138 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network: 853 hospitalized cases (75%) were due to influenza A and 285 cases (25%) were due to influenza B. The greatest proportion of hospitalized cases were in children aged 0-2 years (40 %). To date,190 intensive care unit (ICU) admissions have been reported. Children aged 2 to 4 and 5 to 9 years accounted for 28% and 26% respectively of ICU admissions. A total of 113 ICU cases (59%) reported at least one underlying condition or comorbidity. Eight influenza-associated deaths have been reported.

Table 2 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16*

Age Groups	Cumulative (30 Aug. 2015 to 9 Apr. 2016)					
	Influenza A				Influenza B	Influenza A and B (#(%))
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total	
0-5m	112	32	5	75	21	133 (12%)
6-23m	261	73	7	181	59	320 (28%)
2-4y	246	78	<5	x	78	324 (28%)
5-9y	177	47	<5	x	89	266 (23%)
10-16y	57	18	<5	x	38	95 (8%)
Total	853	248	21	584	285	1138 (100%)

x - Suppressed to prevent residual disclosure*Not included in Table 2 are two IMPACT cases that were due to co-infections of influenza A and B.

Figure 7 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, pediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)*



*Not included in Figure 7 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

In week 14, 36 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS) (Figure 7). The largest proportion of hospitalizations was in adults 65+ years of age (50%) and due to influenza A (75%).

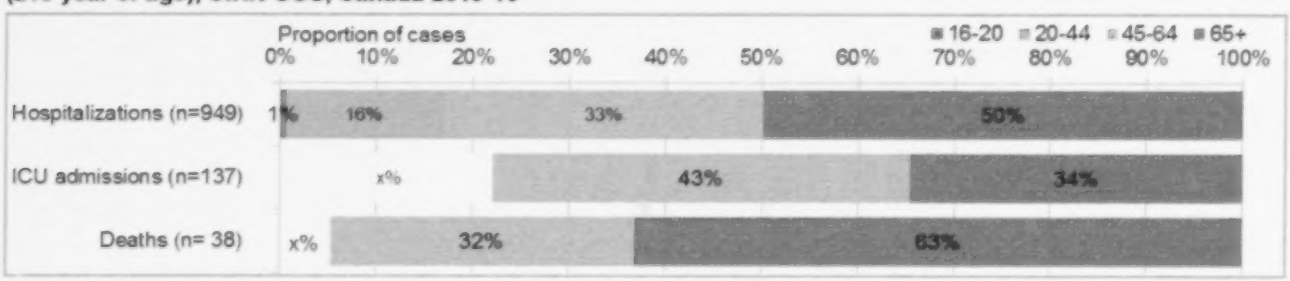
To date this season, 956 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (85%) and the largest reported proportion was among adults ≥65 years of age (49%). One hundred and thirty-seven intensive care unit (ICU) admissions have been reported. A total of 88 ICU cases reported at least one underlying condition or comorbidity. A total of 38 deaths have been reported this season with the majority of deaths reported in adults ≥65 years of age (63%).

Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by CIRN-SOS, Canada, 2015-16

Age groups (years)	Cumulative (Nov. 1, 2015 to 9 Apr. 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	5	<5	0	<5	<5	6 (1%)
20-44	127	38	<5	x	28	155 (16%)
45-64	286	84	3	199	30	316 (33%)
65+	388	96	21	271	84	472 (49%)
Unknown	6	0	<5	<5	<5	7 (1%)
Total	812	225	26	561	144	956
%	85%	28%	3%	69%	15%	100%

x - Suppressed to prevent residual disclosure

Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group (≥16 year of age), CIRN-SOS, Canada 2015-16



Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

x - Suppressed to prevent residual disclosure

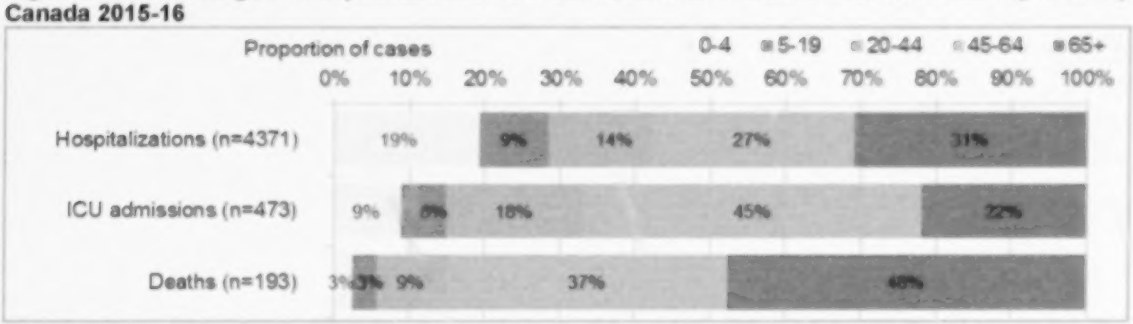
Provincial/Territorial Influenza Hospitalizations and Deaths

In week 14, 311 hospitalizations were reported by participating provinces and territories*. The majority of hospitalizations were due to influenza A (61%), however a marked increase in the proportion of influenza B cases has been noted in week 14 . Influenza B accounted for 39% of all influenza hospitalizations in week 14 compared to 22% in week 13. The largest proportion of cases reported in week 14 was in adults 65+ years of age (35%).

Since the start of the 2015-16 season, 4,371 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 3,637 hospitalizations (83%) were due to influenza A and 734 (17%) were due to influenza B. Of the 473 ICU admissions reported, 245 (58%) were due to influenza A(H1N1) A total of 193 deaths have been reported; all but 22 were associated with influenza A..

Overall this season, hospitalizations have been reported more frequently among adults ≥65 years of age. The largest proportion of ICU admissions were reported in adults 45-64 years of age and the highest proportion of fatal cases was reported in adults ≥65 years of age. Pediatric (0-19 years) and young to middle-aged adults (20-44 years) accounted for 42% of all hospitalizations and 15% of all deaths reported to date this season.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group, Canada 2015-16



* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

x - Suppressed to prevent residual disclosure

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 1580 influenza viruses [179 A(H3N2), 889 A(H1N1) and 512 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, 42 A(H3N2) viruses were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 137 A(H3N2) viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013. A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

Influenza A (H1N1): All of the 889 A(H1N1) viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

Influenza B: A total of 125 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. A total of 387 influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 Northern Hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.

The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 1,078 influenza viruses for resistance to oseltamivir, 1,079 for resistance to zanamivir and 1,027 influenza viruses for resistance to amantadine. All but eight tested viruses were sensitive to oseltamivir. The eight H1N1 viruses resistant to oseltamivir had a H275Y mutation. All viruses tested for resistance were sensitive to zanamivir. All but one influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	142	0 (0%)	142	0 (0%)	173	172 (99.4%)
A (H1N1)	656	8 (1.2%)	657	0 (0%)	854	854 (100%)
B	280	0 (0%)	280	0 (0%)	NA[1]	NA[1]
TOTAL	1078	8 (0.7%)	1079	0 (0%)	1027	1026

[1]NA: Not Applicable

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2015-2016 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Government of Canada Influenza webpage under Weekly influenza reports.

Ce rapport est disponible dans les deux langues officielles.